

What is claimed is:

1. An expansion joint for joining sections of a structure, the expansion joint comprising:  
a first generally planar member configured to be able to slide on a first portion of  
5 at least one section of a structure thereon;  
second and third generally planar members configured to be able to slide on a  
second portion of at least one section of the structure thereon, the second and  
third members being substantially co-planar with each other and being  
substantially parallel to the first member, the second and third members being  
10 vertically spaced-apart from the first member; and  
an expansion device interposed between the second and third members.
2. The expansion joint of Claim 1, wherein the biasing device defines a hole for  
receiving a fastener therein.
3. The expansion joint of Claim 2, wherein the at least one section includes adjacent  
15 sections of the structure.
4. The expansion joint of Claim 1, wherein the second and third members each define  
a hole for receiving a fastener thereon.
5. The expansion joint of Claim 4, wherein the at least one section is configured to  
allow sliding of an overlapping portion of a second section thereon.
- 20 6. The expansion joint of Claim 1, wherein the expansion joint is made of a composite  
material.
7. The expansion joint of Claim 1, wherein the expansion joint is made of materials  
with equivalent expansion characteristics.
8. The expansion joint of Claim 1, wherein the structure includes a bridge and the  
25 sections include panel sections of a bridge deck.



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9. The expansion joint of Claim 1, wherein the expansion device includes an expansion spring.
10. The expansion joint of Claim 1, wherein the expansion device includes a stiffening member.
- 5 11. An expansion joint for joining adjacent sections of a structure, the expansion joint comprising:
- a first generally planar member configured to allow sliding of first portions of adjacent composite sections of a structure thereon;
- 10 second and third generally planar members configured to slidably receive second portion of the adjacent sections of the structure thereon, the second and third members being substantially co-planar with each other and being substantially parallel to the first member, the second and third members being vertically spaced-apart from the first member; and
- 15 an extension spring interposed between the second and third member, the extension spring defining a hole for receiving a fastener therein.
12. The expansion joint of Claim 11, wherein the expansion joint is made of composite material.
13. The expansion joint of Claim 11, wherein the expansion joint is made of a material with equivalent expansion characteristics.
- 20 14. The expansion joint of Claim 11, wherein the structure includes a bridge and the sections include panel sections of a bridge deck.
15. An expansion joint for joining overlapping sections of a structure, the expansion joint comprising:
- a first generally planar member configured to be able to slide on a first portion of a first section of a structure thereon, the first portion of the first section being configured to
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be able to slide on an overlapping first portion of a second section of the structure thereon;

second and third generally planar members configured to be able to slide on the second portion of the first and second sections of the structure thereon, respectively, the second and third member being substantially co-planar with each other and being substantially parallel to the first member, the second and third members being vertically spaced-apart from the first member, the second and third members each defining a hole for receiving a fastener therein; and

a stiffening member interposed between the second and third members, the stiffening member accommodating expansion of the second and third members.

16. The expansion joint of Claim 15, wherein the expansion joint is made of composite material.

17. The expansion joint of Claim 15, wherein the expansion joint is made of a material with equivalent expansion characteristics.

18. The expansion joint of Claim 15, wherein the structure includes a bridge and the section include panel sections of a bridge deck.

19. A bridge comprising:

at least a first section of panel bridge deck;

at least a second section of panel bridge deck; and

at least a first expansion joint interposed between the at least first and second sections, the at least first expansion joint including:

a first generally planar member configured to slide on first portions of the first and second sections of the panel bridge deck thereon;

second and third generally planar members configured to slide on second portions of the first and second sections of the panel bridge deck thereon, the second and third members being substantially co-planar with each other and being substantially



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parallel to the first member, the second and third member being vertically spaced-apart from the first member; and

an expansion device interposed between the second and third members.

- 5                   fastener therein.
21. The bridge of Claim 20, wherein the first and second sections of panel bridge deck are adjacent sections of bridge.
22. The bridge of Claim 19, wherein the second and third members each define a hole for receiving a fastener thereon.
- 10               23. The bridge of Claim 22, wherein the first section of panel bridge deck is configured to allow sliding of the overlapping portion of the second section of honeycomb bridge deck.
24. The bridge of Claim 19, wherein the first and second sections of panel bridge deck and the expansion joint are made of composite material.
- 15               25. The bridge of Claim 19, wherein the first and second sections of panel bridge deck and the expansion joint are made of a material with equivalent expansion characteristics.
26. The bridge of Claim 19, wherein the biasing device includes an expansion spring.
27. The bridge of Claim 19, wherein the biasing device includes a stiffening member.
- 20               28. A method of assembling a structure, the method comprising:
- attaching an expansion joint to a support beam of a structure;
- allowing to slide a first section of the structure on the expansion joint;
- attaching the first section to the expansion joint;
- allowing to slide a second section of the structure on the expansion joint; and
- 25               attaching the second section to the expansion joint.
29. The method of Claim 28, wherein the structure includes a bridge.




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30. The method of Claim 29, wherein the first and second sections include panel bridge deck sections.

31. The method of Claim 30, wherein the panel bridge deck sections and the expansion joint are made of same materials.

5 32. The method of Claim 31, wherein the panel bridge deck sections and the expansion joint are made of a composite material.

33. The method of Claim 31, wherein the panel bridge deck sections and the expansion joint are made of a material with equivalent expansion characteristics.

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